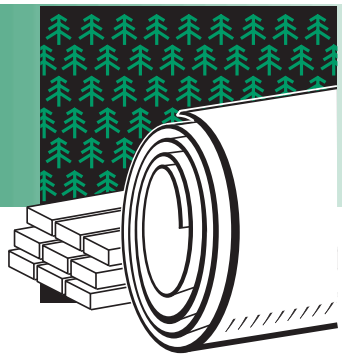
FOREST PRODUCTS

Project Fact Sheet



Sustaining the Productivity and Function of Intensively Managed Forests

Benefits

- A model useful for developing management guidelines specific to localized soil conditions
- Better soil-mapping criteria to allow industry to manage environmentally sensitive areas
- A determination of whether current BMPs are adequate and necessary
- Improved information on site preparation, including the effectiveness of bedding, mole-plowing, and slash retention
- Better definition of how forest management affects hydrologic balance and water quality, and of how to superimpose silviculture on wetlands
- Improved productivity and competitiveness for industry

Applications

Data from the study plots will be on a scale that may be extrapolated to larger, commercial operations. This investigation was designed to meet the needs of the forestry industry and the results will be readily transferred to the forestry and bioenergy sectors. Data may be shared with modeling scientists at Oak Ridge National Laboratory so that the study results will be more readily transferred to various regions of the country.

Intensive silviculture can be compatible with long-term soil productivity and wetland function

Foresters seek answers to how the soil and site disturbances, inevitable in the normal practices of managed forestry, may affect the long-term sustainability of the forest ecosystem, and to what types of mitigation measures should be incorporated into these forestry practices. Better understanding of the interaction of such parameters as intensive forest management, soil productivity, wetland function, and timber production will allow the forest products industry to develop appropriate guidelines and models for its forestry activities.

Such information will help the forest, wood, and paper industry increase its productivity and compete globally, while remaining sensitive to environmental standards and sustainable forest management. There are presently 10 million hectares of extremely productive managed forests along the Atlantic and Gulf Coastal Plain (see example in Figure 1), but there is concern that long-term soil disturbances due to logging and forest management may compromise the "carrying capacity" of these sites.

There is also concern for proper approaches to protecting wetlands in forested areas. These sensitive ecosystems are coming under increased scrutiny and protection by Federal and state agencies, other public organizations, private groups, and the public as greater recognition is given to their important environmental and societal values. It is believed that intensive silviculture within natural wetlands is compatible with the functioning of the wetlands. However, these studies are needed to ensure that managed forestry does not interfere with water quality, wetland hydrology, nutrient cycling, wildlife habitat and food chains, and certain socioeconomic issues concerning wetland areas.

Intensive Silviculture

The goals of this project are sustainable wood production (in excess of 500 $m^3 ha^{-1}$ in 20 years) and wetland function of intensively managed plantations.

Project Description

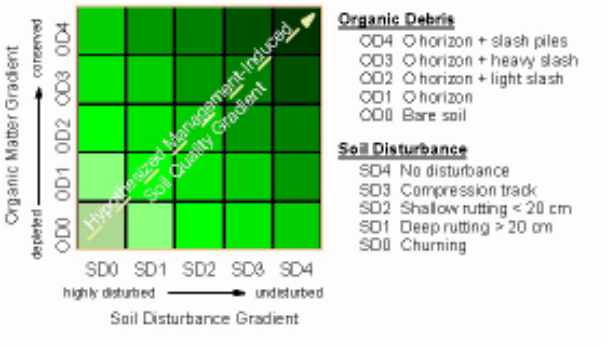
Goals: To study methods for managing pine plantation systems in the Southeast in a sustainable manner, and for ensuring the integrity of natural wetlands on which managed forests have been superimposed.

In this two-year project, objectives related to **basic research** include identifying the conditions necessary for continued forest productivity in Atlantic Coastal Plain soils (e.g., nutrients, site hydrology); determining how intensive forest management improves or damages soils, if at all; characterizing the role of subordinate vegetation in maintaining soil quality; and determining if wetland functions that sustain long-term soil productivity can be maintained.

Objectives related to **applied research** include developing soil-disturbance "hazard ratings" based on their strength, moisture, and depth to water table; determining a system to predict how spatial and temporal forest management influences pine yields based on soil, hydrologic, and growth processes; and assessing the effectiveness and appropriateness of current "best management practices" (BMPs) in the context of initiatives for sustainable forestry.

Progress & Milestones

- Six years of preliminary work have been completed that touch on all of the on-going objectives. These data will be incorporated into this study.
- Bioassay plots of 200 ft^2, containing loblolly pine plantings at one-foot spacings, are ready to test disturbance, enhancement, and mitigation effects on soil and plant productivity.
- These accelerated plots may be extrapolated to simulate tree growth in older, more widely spaced tree stands.
- Investigators and industry will together develop practical management guidelines to minimize soil disturbance and enhance its productivity.
- Effect of treatments on two-year tree height has been determined (see Figure 2).
- Water table dynamics are being composed seasonally across all treatments.



Treatment combinations imposed in study.

Project Partners

Virginia Polytechnic Institute & State University
Blacksburg, VA

Westvaco Corporation
Forest Science Laboratory
Summerville, SC

National Council for Air & Stream Improvement
Raleigh, NC

USDA Forest Service
Wetlands Center & Harvesting Lab
Charleston, SC and Auburn, AL

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